TETRA TECH

October 7, 2015

Mr. James Bennett
United States Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

Subject: Notice of Deficiency: Bittinger #3
UIC Class II-D Well (Commercial) Permit Application
Columbus Township, Warren County, Pennsylvania

Dear Mr. Bennett:

In response to the USEPA Region III comment letter dated June 2, 2015 on the subject UIC Class II-D Well permit application, this letter summarizes each comment and Bear Lake Properties, LLC's (Bear Lake Properties') response.

Item

1. **Comment:** UIC Application Form – Please provide a digital copy of the entire Bittinger 3 application to our office. A digital copy can be sent via email to bennett.james@epa.gov and scavello.grant@epa.gov.

Response: A digital copy of the entire Bittinger #3 permit application has been sent via email to both email addresses referenced in the comment.

2. **Comment:** Area of Review – Region 3 uses a Zone of Endangering Influence model to determine if the ¼ mile Area of Review is adequate. In order to run this calculation EPA needs the following characteristics of the injection formation and proposed well: initial pressure at the top of the injection formation; injection rate; specific gravity of injection fluid; permeability; reservoir thickness; porosity; surface elevation; depth to injection zone; and depth to the lowermost Underground Source of Drinking Water. Data collected during the testing and logging of the subject well are preferred, however such data may not be available in which case secondary data may be used. Secondary data might be found in published studies, particularly from compilations of reservoir characteristics by state geological surveys. Though Bear Lake Properties, LLC is currently operating three UIC Class II disposal wells in the same area as this application and under review for two additional wells, a reservoir thickness of 61 feet was provided for all wells in calculating the Area of Review. The Bittinger 3 well completion report lists the Medina Group's Grimsby, Power Glen, and Whirlpool layers with thicknesses of 126, 38, and 15 feet, respectively, and a perforated interval of 13 feet. Please explain how 61 feet was determined to be the appropriate reservoir thickness for use in the Area of Review calculation.

Response: The reservoir thickness of 61 feet was based on the approximate average net thickness of sandstone in the Medina-Whirlpool interval having a porosity greater than or equal to 6% based on analysis of neutron-density logs for the Bittinger #3 and nearby wells. It was assumed that these higher porosity intervals would be the primary intervals receiving injected brine.

Tetra Tech, Inc.
661 Andersen Drive, Pittsburgh, PA 15220
Tel 412.921.7090 Fax 412.921.40404 www.tetratech.com

3. **Comment:** Area of Review – 40 CFR 144.31(e)(7) requires a topographic map (or other map if a topographic map is unavailable) extending one mile beyond the property boundaries of the source depicting the facility and each of its intake and discharge structures; each of its hazardous waste treatment, storage, or disposal facilities; each well where fluids from the facility are injected underground; and those wells, springs, and other surface water bodies, and drinking water wells listed in public records or otherwise known to the applicant within a quarter mile of the facility property boundary. Past practice has been to require applicants to include this information for ½ mile from the injection well. The definition of ¼ mile from the facility property boundary has been challenged and Region 3 has used ¼ mile past the area of review (1/2 mile total) in past permits. Applicant stated that these were not found within the Area of Review (1/4 mile), however this search needs to be expanded. Also, a list of all landowners within this expanded area and their addresses must be submitted.

Response: The subject area referenced in the comment has been expanded to a ½ mile radius and application maps and tables updated accordingly (Attachment #1). Shown on the maps and tables are those wells, springs, and other surface water bodies, and drinking water wells listed in public records or otherwise known to Bear Lake Properties. Water wells and oil and gas wells are shown on one map (as opposed to two maps in the original application). Also included in Attachment #1 are a map and table identifying landowners within a ½ mile radius of the Bittinger #3 well.

4. **Comment:** Corrective Action Plan – R. Craker #1 and D. Wright #1 are listed as monitoring wells to be used for monitoring Bittinger #3. As requested in the Smith-Ras 1 Notice of Deficiency, describe in detail the monitoring network that will be used to monitor all five injection wells.

Response: The following strategically located wells have been selected to monitor the three existing and two proposed injection wells:

Monitoring Well	**Producing Interval**
R. Trisket #1	Medina-Whirlpool
R.Trisket #2	Medina-Whirlpool
T. Reed #4	Medina-Whirlpool
D. Wright #1	Medina-Whirlpool
R. Craker #1	Medina-Whirlpool

A map showing the location of the monitoring wells is included as Attachment #2.

5. **Comment:** USDW's – Applicant searched for groundwater wells within the ¼ mile area of review. As discussed above applicant has to locate wells within ¼ mile of the property boundary.

The property boundary is hard to define so EPA has determined ½ mile as being adequate to meet this requirement. Please include all wells within a ½ mile boundary.

Response: As discussed above in the response to Comment #3, groundwater wells within a ½ mile radius of the Bittinger #3 have been identified (to the extent possible based on publicly available information and otherwise known to Bear Lake Properties) and listed on the table in Attachment #1.

6. **Comment:** Geologic Data/Well Construction – The well completion record for Bittinger 3 lists perforation from a depth of 4321' to 4334', which penetrates the Grimsby layer. The well construction diagram, however, lists perf and frac from 4,260'-4,439' which penetrates the Grimsby, Power Glen, and Whirlpool layers as described in the permit application. This is also a difference in injection interval of 13' versus 179'. Please account for the discrepancy in these records and confirm the correct injection interval.

Response: The well completion record for the Bittinger #3 shows the intervals and depths perforated as part of the original well completion. Bear Lake Properties intends to perforate the entire Medina-Whirlpool interval to maximize injection potential. The proposed injection interval for the well was shown on the well construction diagram. The well construction diagram has been revised to reference both the original perforated intervals as well as the proposed perforated interval for the injection well (Attachment #3).

9. **Comment:** Geologic Data – In calculating fracture gradient, depth (D) used is 4391'. Please explain the reason for using this depth in calculating the fracture gradient, as it does not appear to match up with the logs or diagrams provided in the permit.

Response: The depth of 4391' was used because it was the deepest perforation listed on the completion summary (Attachment #4 - Exhibit 1) for the nearby Smith-Ras #1 that was included in the Geologic Data Section of the Permit Application. The Smith-Ras #1 completion information was utilized since ISIP records were not available for the Bittinger #3 well. These wells were completed using the same techniques and have very similar geologic conditions as indicated by the Billman Geologic Report included in the original application. This depth of 4391' correlates with the approximate base of the Whirlpool Sandstone in the Smith-Ras #1 being marked as 4,396' on the log copy attached (Attachment #4 - Exhibit 5) and because of it being deeper than any of the other depths, creates a conservative calculation for the fracture gradient.

10. **Comment:** Geologic Data – In calculating fracture gradient, a specific gravity (SG) of 1 was used in the application. Was fresh water used for the frac fluid in determining ISIP for the injection zone? The frac record included mentions nitrogen in the document. If nitrogen was used then calculating the fracture gradient with a specific gravity of 1 would be incorrect. Also, which zone was calculated to have an ISIP of 2200? Please submit the graphs and data obtained during hydraulic fracturing the well.

Response: In calculating the fracture gradient there was no adjustment made for the nitrogen used in the stimulation, because the nitrogen was not in the Smith-Ras #1 wellbore when the ISIP of 2200 psig was recorded. Attachment #4 - Exhibit 2 (not included in original Permit Application)

and Attachment #4 - Exhibit 3 (previously included in the Permit Application) provide more detail of the activities at the various fluid volume stages than the Attachment #4 - Exhibit 1 which was included in the Permit Application. You will note that at 535 barrels, the nitrogen was cut. This means that no nitrogen was added subsequent to this volume point or during the "Flush". From the point at which nitrogen was cut and the Flush finished, a total of 139 barrels of water was pumped. This is approximately twice the capacity of the 4.5" casing to the deepest assumed perforation of 4,391'. In addition, after the 4 #/gal sand concentration was cut, only 63 barrels were pumped which means the hydrostatic would have included approximately 440' of sand laden fluid. Had this additional hydrostatic been included, the Fracture Gradient would have been a greater number. The use of fresh water at a specific gravity of 1 created a conservative Fracture Gradient calculation for the entire fractured interval from 4,279 thru 4,391 which includes the Grimsby, Power Glen and the Whirlpool. The zone for which the ISIP of 2200 psi was calculated was for the 4279 – 4391 ft interval.

11. **Comment:** Geologic Data – Based on items 10 and 11 above, please recalculate fracture gradient and maximum injection pressure if necessary.

Response: Based on the information provided in the answers to Item 10 and Item 11 above in addition to the attached Exhibits, the calculation of the Fracture Gradient using fresh water and a depth of 4391' provides the most conservative (lowest calculation) evaluation and does not need to be recalculated.

12. **Comment:** Operating Data – It is indicated that a security camera is "strategically located on site". Is the only security camera located at the storage area? What security measures are currently implemented at the offload area? In addition, how will access be granted to those attempting to access the offloading area?

Response: Two Security cameras are presently in operation at the Bear Lake Properties water offload site. These cameras are continuously recording. The offload site is locked when not in operation, and it is manned by Bear Lake Properties personnel during all offloading operations.

13. **Comment:** Operating Data – The specific gravity data submitted was from 2001 brine sampling. Please provide more recent representative brine sampling data for the currently operating wells.

Response: Attachment #5 includes the most recent analysis of our current disposal stream. This water is coming from conventional oil and gas wells in the region, and as such it is lower specific gravity than indicated in our permit application. We have chosen to apply for the maximum allowable injection pressure based upon the heavier brine, in order to simplify our operations in the event that we choose to dispose of the heavier brine. We reserve the right to re-apply for a higher maximum allowable disposal pressure at a future time if we operate exclusively with the lower specific gravity brine.

14. **Comment:** Operating Data – The "Injection Facility Layout" schematic shows currently hooked up injection wells, but does not show proposed Smith-Ras 1 or Bittinger 3 connections. Please show how these will be incorporated into the existing plan.

Response: Attachment #6 is the revised Injection Facility Layout schematic shows the proposed connections for Smith-Ras #1 and Bittinger #3 wells.

15. **Comment:** Well Construction – Please provide cement records for Bittinger 3 surface casing, and if cement records show that cement did not return to surface please submit a cement bond log for the surface casing. The completion report for Bittinger 3 does not indicate whether cement was returned to surface.

Response: The cement volume noted on the original surface casing cement ticket is calculated to completely fill the annular volume. It is expected that the top of the cement is very close to the surface. A bond log on the surface casing will be completed and submitted as scheduling permits.

16. **Comment:** Well Construction – The total depth in figure 1 diagram of the well is 4566 feet. Was the well plugged back to the injection interval proposed in the application?

Response: The state completion report lists the logged TD as 4566'. The state completion report lists the total 4-1/2" casing depth of 4508 and the perforation interval as 4321-4334'. The proposed perforation interval (i.e., injection interval) is 4260-4439'. Any space below the perforated interval down to the casing shoe is likely filled with fluid and frac sand.

17. **Comment:** Plugging – The plugging diagram shows the surface plug below the casing seat. EPA requires at least 50 feet of cement above and 50 feet of cement below the surface casing seat. Please update the plugging and abandonment plan and cost estimate for plugging with the new cemented interval.

Response: The plugging plan included in Attachment #7 has been updated to reflect the 50 feet above and below casing seat.

18. **Comment:** Plugging – As stated in item 6, perf and frac depths do not match well completion report. After providing confirmation of discrepancy adjust injection zone plug depth accordingly so that plug is 50-100 feet above the top of the injection zone.

Response: The attached plugging plan and "Final Plugged Well Drawing" (Attachment #7) have been updated and the plug top has been adjusted to reflect the shallowest proposed perforation of 4260' which will be at the top of the Medina-Whirlpool interval. The existing perforated interval (4321 - 4334') and proposed perforated interval (4,260 – 4439') for the injection well are shown on the previously referenced Well Construction Diagram (Attachment #3).

Note that the plugging cost estimate included language of up to 500 sacks of cement (Exhibit 6) and did not require any price adjustment.

19. **Comment:** Financial Resources – Please refer to the document: Federal Financial Responsibility Demonstrations for Owners and Operators of Class II Oil- and Gas-Related Injection Wells. A copy can be obtained here: http://www.epa.gov/r5water/uic/forms/ffrdooc2.pdf. Review this document and notify EPA of which demonstration will be used. This demonstration needs to be done prior to issuing a draft permit.

Response: The required Financial Responsibility Demonstration vehicle to be utilized for this well is the same utilized for wells previously permitted by Bear Lake Properties, LLC – a collateralized Irrevocable Standby Letter of Credit in favor of the United States EPA in the full amount of the plugging liability. This facility will be established and submitted once the Draft Permit has been cleared for final approval after the public comment period.

20. **Comment:** Pressure Regulation – With the permits all using the same offloading area, how does the Applicant plan to regulate the maximum pressures reaching each well?

Response: As the maximum permitted pressure for each well is fairly similar, Bear Lake Properties simply utilizes the lowest single well's allowable maximum pressure for every well that is tied into a common pipeline system. In that manner BLP ensures that maximum allowable pressure is not exceeded on any well in the system.

Please feel free to contact me with any questions at (412) 921-4006 or via email at dale.skoff@tetratech.com.

Sincerely,

Dale E. Skoff, PG
Sr. Project Manager

Enclosures

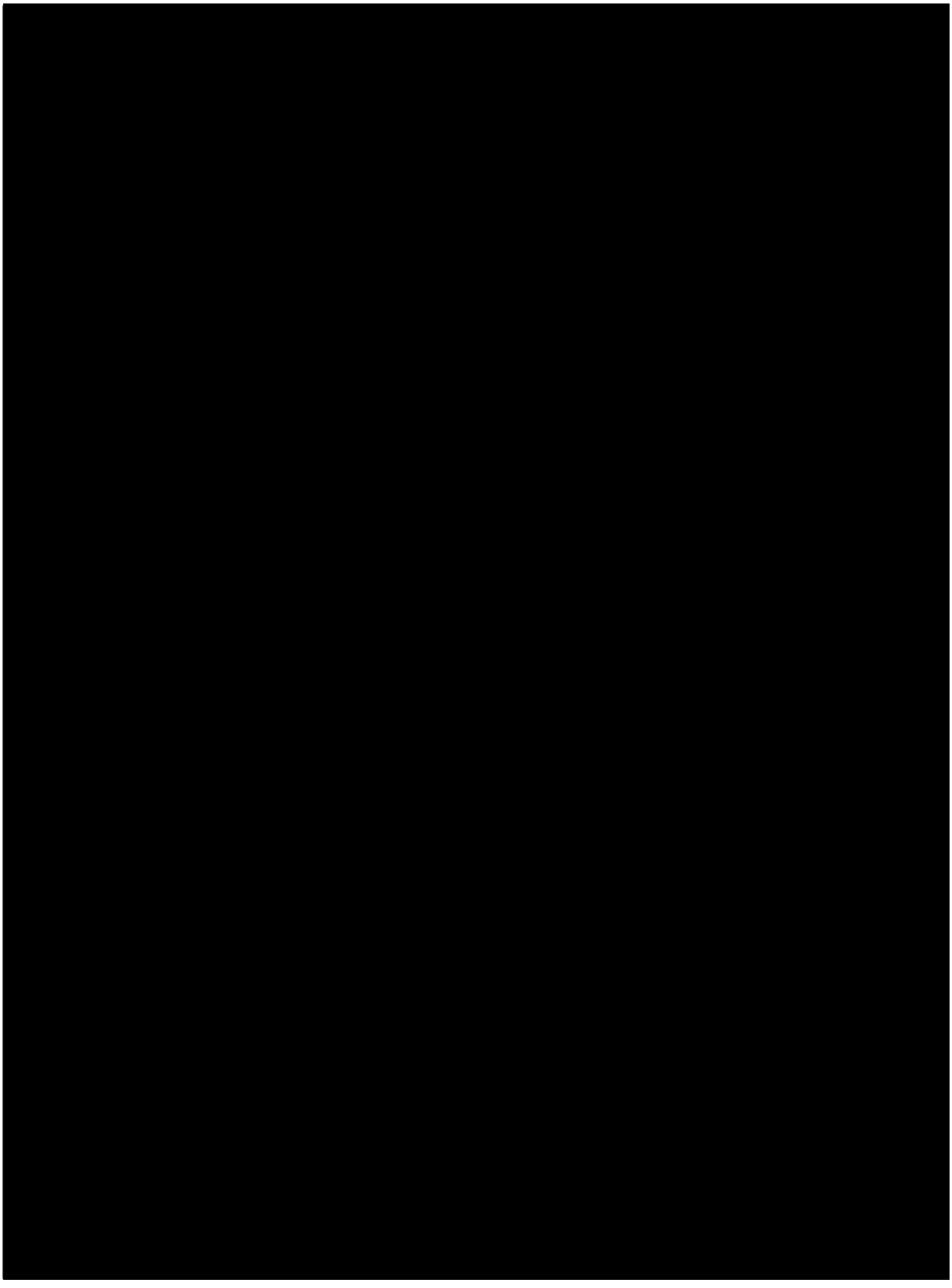
cc: Karl Kimmich – Bear Lake Properties, LLC
John Holko – Bear Lake Properties, LLC

Attachment #1

AOR Maps and Tables

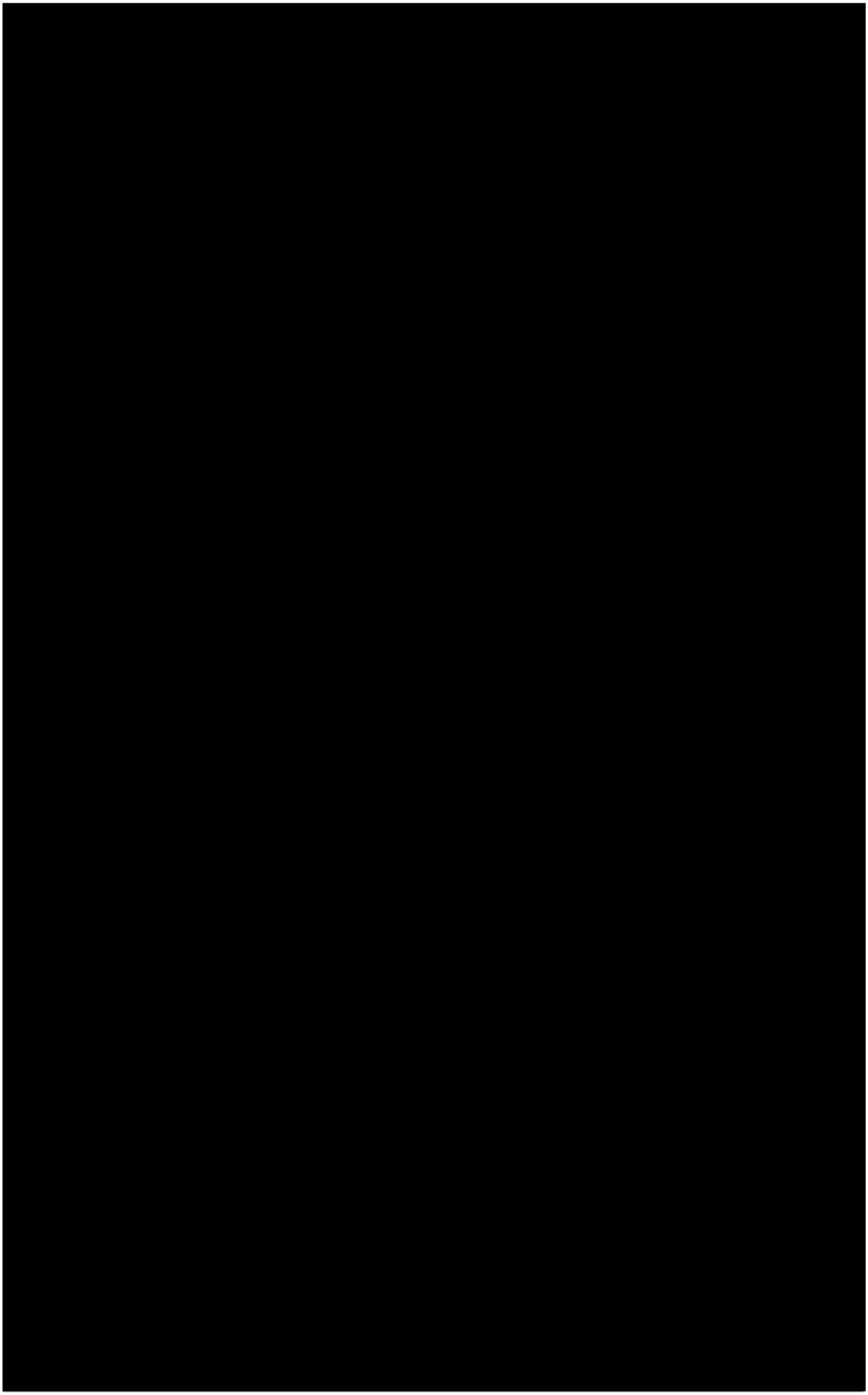
Wells Located Within the 1/2 Mile Radius of The Bittinger #3 Well

Well Owner / Name	API #	Lat	Long	TD	Drilling Completed	Last Csg	Csg depth
Oil and Gas and Proposed Injection Wells							
Bittinger #3 (Proposed InjectionWell)	123-33945	41.99609	-79.52840	4566 ft	10/19/1984	4.5 in	4508 ft
Bittinger #2 (Existing Injection Well)	123-33944	41.997282	-79.75354	4588 ft	1/29/1984	4.5 in	4240 ft
R. Cracker 1	123-37903	41.9745	-79.52182	4584 ft	10/13/1985	4.5 in	4570 ft
Smith/Ras Unit 1 (Proposed Injection Well)	123-34843	41.992727	-79.533861	4516 ft	3/26/1984	4.5 in	4493 ft
D Wright 1	123-39213	41.992044	-79.52273	4479 ft	10/1/1984	4.5 in	4446 ft
Goodrich 1	31013212010000	42.00107	-79.53102	4509 ft	2/24/1989	4.5 in	4483 ft
Harold Cornish Unit 2	31013191940000	42.00077	-79.52431	4632 ft	11/19/1984	4.5 in	4626 ft
[redacted]							



Landowners Within 1/2 Mile of the Bittinger #3 Well

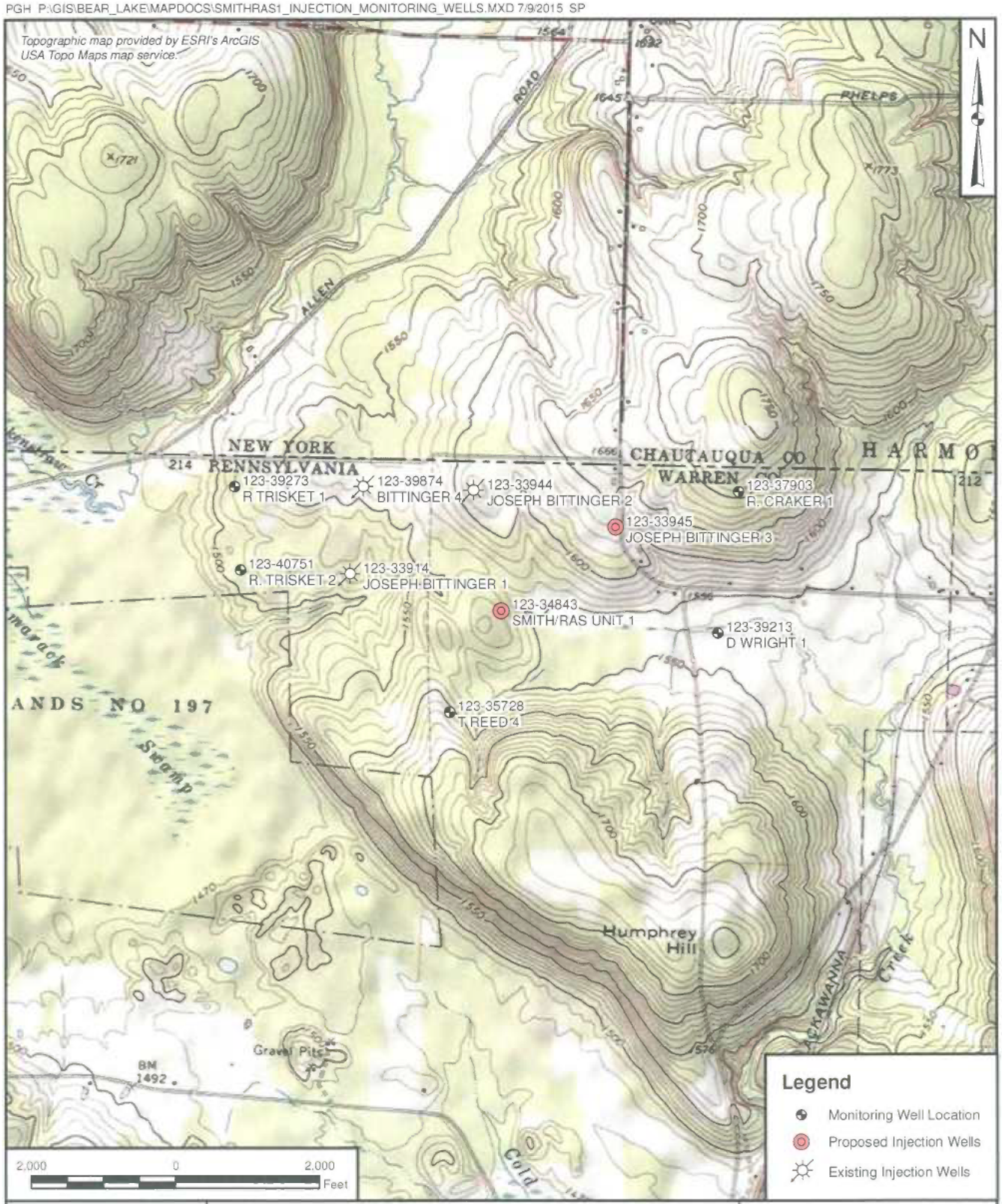
Pennsylvania Landowners
[redacted]



Attachment #2

Monitoring Wells for Facility Injection Wells

PGH P:\GIS\BEAR_LAKE\MAPDOCS\SMITHRAS1_INJECTION_MONITORING_WELLS.MXD 7/9/2015 SP



TETRA TECH

MONITORING WELL NETWORK FOR
EXISTING AND PROPOSED INJECTION WELLS
BEAR LAKE PROPERTIES, LLC
WARREN COUNTY, PENNSYLVANIA

DRAWN BY: S. PAXTON 01/27/15
CHECKED BY: D. SKOFF 07/09/15
APPROVED BY:

CONTRACT NUMBER: 212C-PB-00103

FIGURE NUMBER	REV
2	0

Attachment #3

Well Construction Diagram

Figure 1
Well Construction Diagram

Bear Lake Properties, LLC
Bittinger #3
Columbus Township
Warren County, PA
37-123-33945

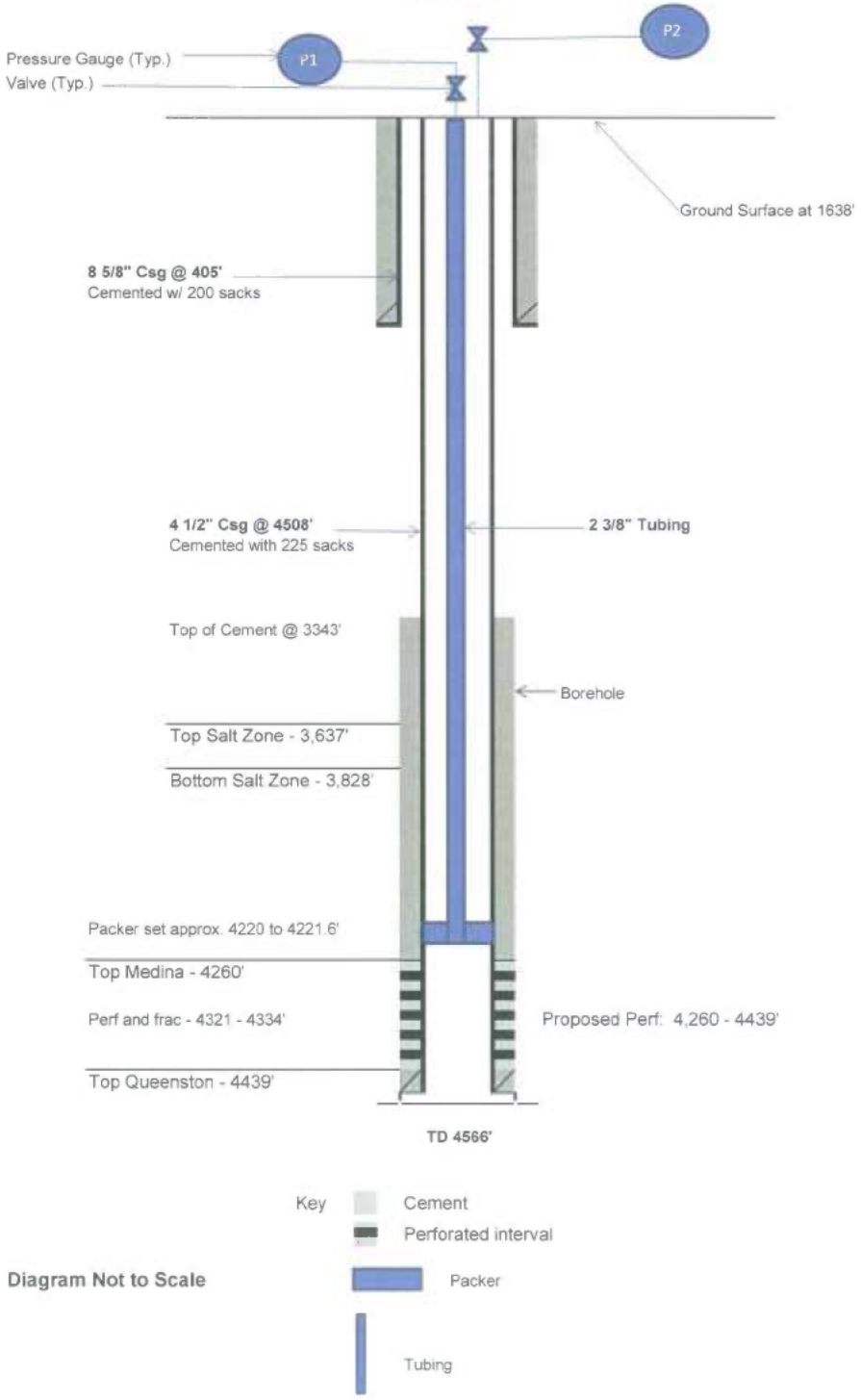


Diagram Not to Scale

Attachment #4

Exhibits 1 to 5 – Smith-Ras #1 Completion Records and Neutron Density Log

Exhibit 1

Well Name & No. SMITH/RAS #1 Loc. _____

Permit No. _____ COLUMBUS Twp.: WARREN Co.: [redacted] PA

Shallowest Perf

PERFORATION RECORD

Company M. L. McCullough Formation Medina/Whirlpool Date 6/26/84

Pumped in 500 gal. acid and 500 gal. water, ran Gamma Ray and collar log.
PBTD 4487 ft. Perf. as follows:

4279	-	4316	w/ _____	shots	-	4382	-	4393	w/ _____ shots
4305	-	4318	w/ _____	shots	-	4390	-	_____	w/ _____ shots
4309	-	4334	w/ _____	shots	-	4391	-	_____	w/ _____ shots

Deepest Perf

Size of shots .42 Total Shots 10

FRAC JOB

Company Dowell Schlumberger Date 6/27/84

Loaded hole. Broke formation @ 2100 # Back to 950 #. Pumped in 500 gals. 15% HCL Acid @ 20 BPM @ 3300 #, waited 5 min. & fraced as follows:

	BBLS./[redacted].		SAND # Per Gal.	Size	BPM	Press.
1.	0-144		Pad	- - - -	20	3400
2.	144-339		2#	20/50	21	3350
3.	339-490		3#	20/50	21	3250
4.	490-613		4#	20/50	20	3500
5.	613-675		Flush	- - - -	14.5	3500
6.						
7.						
8.						
9.						
10.						
11.						
12.						
13.						
14.						
15.						
16.						
17.						
18.						
19.						
20.						

ISIP 2200 # 5 MIN. 1950 # Job complete 12:26 P.M

Open to pit 1:26 P.M. Flowed back 24 hrs. Total water 675 bbls.
52,000 # 20/40 & - - - - # 80/100. Avg. pump rate 21 BPM @ 3369 # Press
BHP used 1734. Nitrogen used 140,000.

REMARKS: At 340 BBLS cut N, due to high pressure - at 613 BBLS cut sand due to high pressure - well screened off - 4 BBLS short of flush to perfs.

[redacted]

ENGINEER

7-6-84

EXHIBIT C

WELL TREATMENT REPORT

DOWELL DIVISION OF DOW CHEMICAL U.S.A.

DWL-494-N PRINTED IN U.S.A.

DATE 6/27/84

TREATMENT NUMBER 5044

PAGE 1 OF ___ PAGES

WELL NAME AND NUMBER: Smith 2 Rhz. #1

LOCATION (LEGAL):

DOWELL LOCATION: Corry

POOL / FIELD:

FORMATION: ——

JOB DONE DOWN: TUBING ☐ CASING ☐ ANNULUS ☐

ALLOWABLE PRESSURE: TBG: —— CSG: 3500

COUNTY / PARISH: Warren

STATE: PA

TYPE OF WELL: OIL ☐ GAS ☐ WATER ☐ INJ. ☐

OIL: API GRAVITY —— VAPOR PSI

TYPE OF SERVICE: ☐ Acidizing ☐ Fracturing ☐ Sand Control ☐ Other

SERVICE NAME: WF 30 #

AGE OF WELL: NEW WELL ☐ REWORK ☐

TOTAL DEPTH: 4457 BHT. (LOG)

CUST. NAME: U.S. Energy

ADDRESS: 670 Statler Bld

CITY, STATE ZIP CODE: Buffalo NY 14202.

CASING SIZE	WT.	DEPTH	TUBING SIZE	WT.	DEPTH
TYPE OR GRADE			TYPE OR GRADE		

LINER SIZE	WT.	TOP-BOTTOM	PACKER TYPE	PACKER DEPTH

OPEN HOLE	CASING VOL.	TUBING VOL.	ANNULAR VOL.
	48		

SERVICE INSTRUCTIONS: Frac 52,000# 20/40 sd 700 # 20/40 44 J218, 40 gal L-53-W 40 gal F75-N 15 M76 150# L-56, 140,000 scf N2

PERFORATED INTERVALS

TOP	TO	BOTTOM	NO. OF HOLES	TOP	TO	BOTTOM	NO. OF HOLES
4269	TO	4388	10		TO		
	TO				TO		
	TO				TO		
	TO				TO		

FOR CONVERSION PURPOSES 24 BBLS EQUALS 1000 GALLONS

ARRIVED ON LOCATION: 1015 LEFT LOCATION: 1300

DIAMETER OF PERFORATIONS =

TIME (0001 to 2400)	RATE BPM	TYPE OF FLUID	DENSITY	INCREMENT VOL. BBLS.	CUM. VOL. BBLS.	PROP TYPE	PROP #/GAL	CSG. PRESSURE	TBG. PRESSURE	NOTATIONS
1130		WF30 #								Pre-Job Safety Meeting
1145										Pre-Job Pressure Test To 4900 psi
1155										start break down
1157									2100	Break down.
1158										ISIP (1600)
1200½	19.5	WF30						3200		start gel pad
1201½					19			3200		start N2.
1206½	20				144	20/40	2	3400		start sand
1212								3200		
1216½	21				339		3	3300		increase sand
1220½					420		4	3250		increase sand
1226								3300		
1228	19				535			3450		cut N2 140,000 scf
1230	20				611			3350		cut sand 43,000 20/40
1234	15				674			3650		Flush
										(2200 ISIP 5 min (1850))
1240										Job comp.

FRAC. GRADIENT:

AVG. INJECTION RATES: LIQ. 21 W/PROP 21

TOTAL FLUID: 674 BBLS.

TOTAL PROP: 52,000 # LBS.

TREATING PRESSURE SUMMARY: MAX 3650 FINAL 3650 AVG. 3369 IMMED. S.D.P. 15 MIN. SIP

PRODUCTION PRIOR TO THIS TR.: ☐ Test ☐ Stabilized

CUSTOMER REPRESENTATIVE: Mac Rae

DOWELL SERVICE SUPERVISOR: D. [illegible]

MATERIALS CHARGED FOR:

MTRL	QUANTITY	MTRL	QUANTITY
20/40	52000		
J264	700		
J218	44		
L-56	180		
M76	150		
F75-N	40		
L-53-W	40		
N2	140000 scf		

Exhibit 3

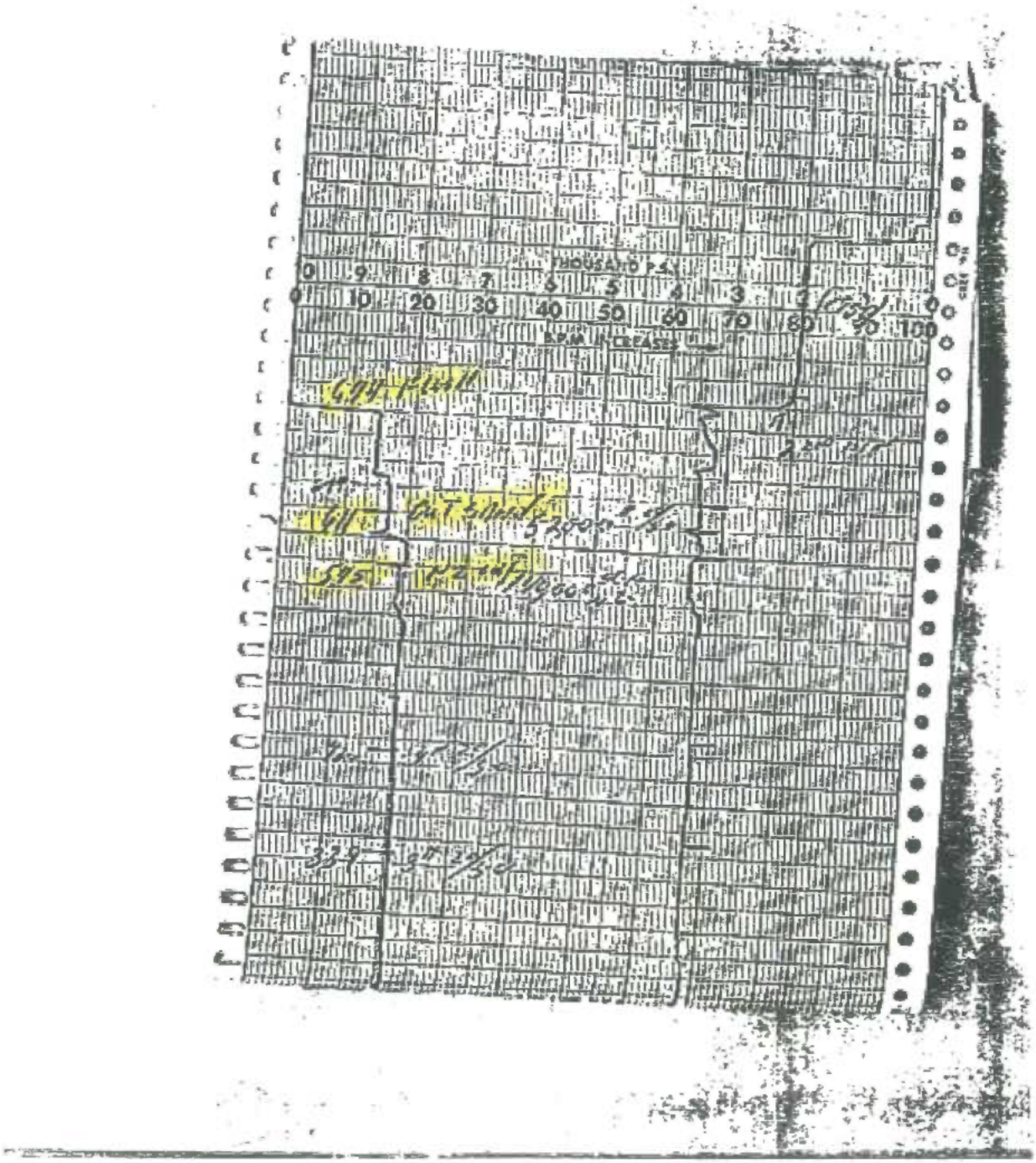
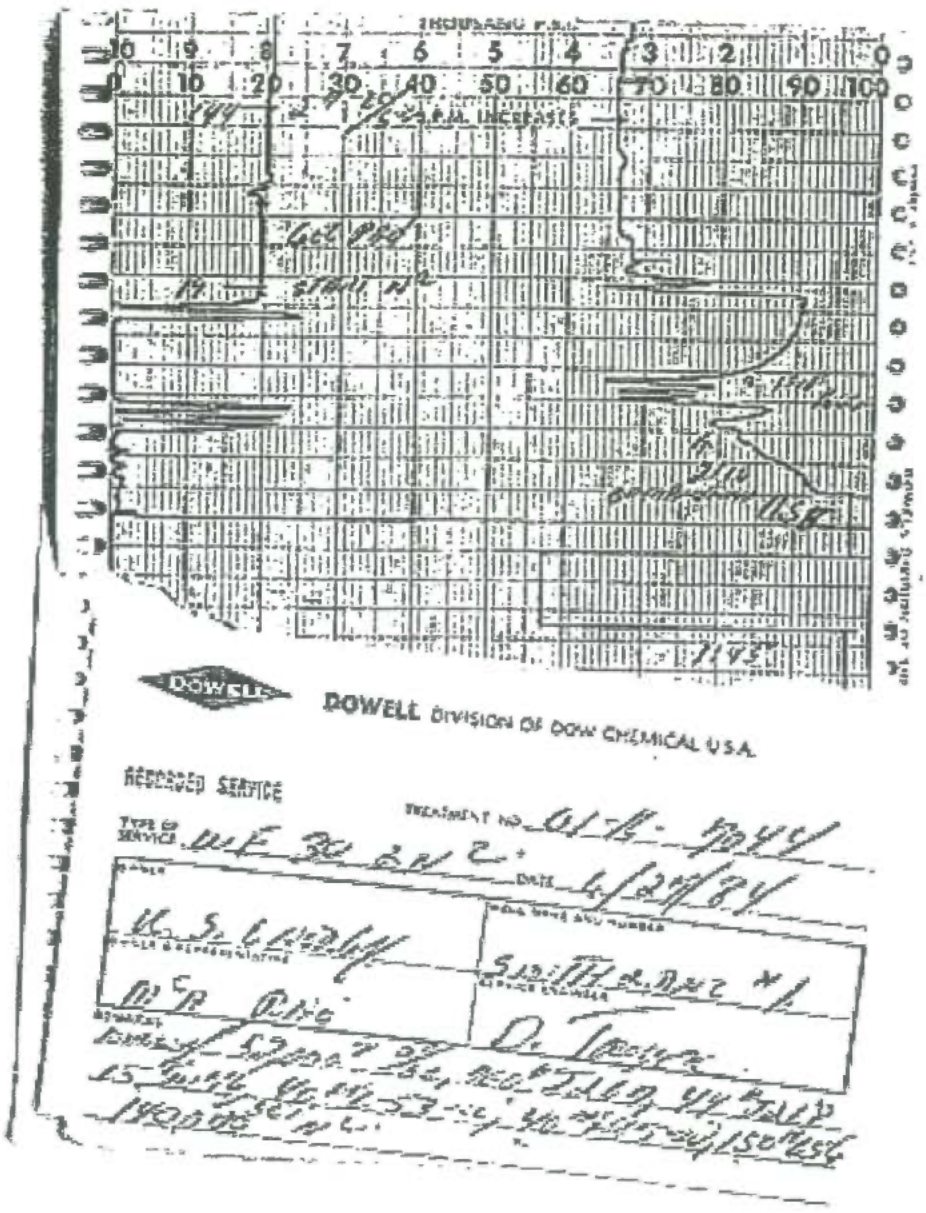

THOUSANDTHS
0 9 8 7 6 5 4 3 2 1 0
0 10 20 30 40 50 60 70 80 90 100
R.P.M. INCREASE

Exhibit 4


DOWELL
DOWELL DIVISION OF DOW CHEMICAL U.S.A.
RECORDED SERVICE

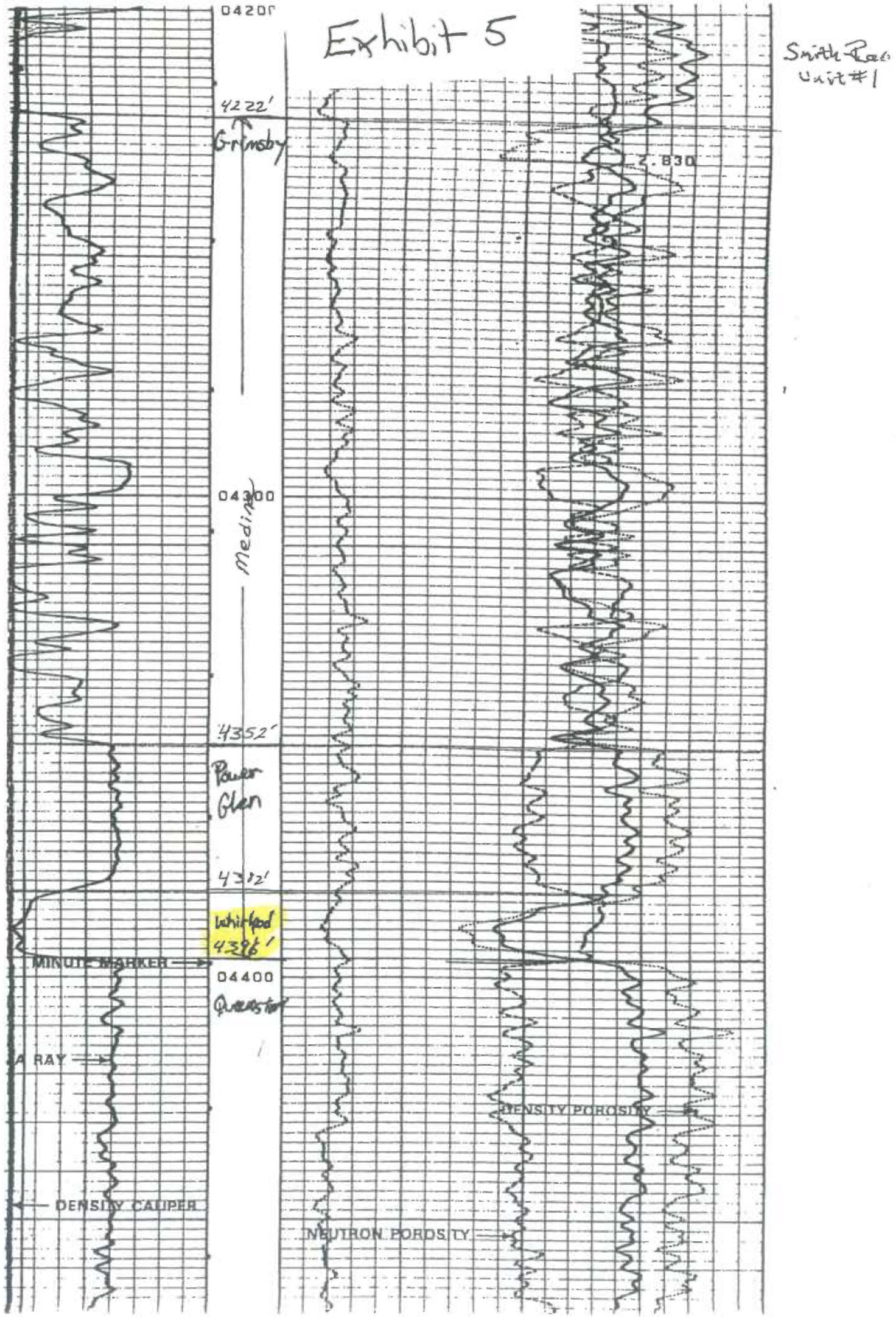


Exhibit 5
Smith Rac
Unit #1
04200'
4222'
Grimsby
2.830
04300
Medina
4352'
Power
Glen
4392'
Whirlpool
4398'
MINUTE MARKER
04400
Queenston
A RAY
DENSITY CALIPER
DENSITY POROSITY
NEUTRON POROSITY

Attachment #5

Recent Analysis of Disposed Brine

Analytical Services, Inc.

P.O. Box 237
Brockway, PA 15824-0237

GENERAL CHEMICAL ANALYSIS REPORT

Laboratory (814) 265-8749
FAX (814) 265-8749

CUSTOMER: Waste Treatment Corp.
P.O. Box 1550
Warren, PA 16365
Attn: Rich Gorton

SAMPLE DATE: 03/27/14 at 8:00 am
RECEIPT DATE: 03/27/14 at 2:30 pm

REPORT DATE: 04/02/14
ASI ID#: 125020

DESCRIPTION OF SAMPLE: WTC Final Effluent

TOTAL ANALYSIS RESULTS

PARAMETER	RESULT	UNIT	QUANTITATION LIMIT	METHOD	BY	DATE & TIME
Hydrogen Sulfide	<0.02	mg/L	0.02	SM 4500 S^2-F	CH	03/27/14 @ 8:00 am
Dissolved Oxygen	6.29	mg/L	--	SM 4500 O-G	CH	03/27/14 @ 8:00 am
Temperature	35	°F	--	Measured	CH	03/27/14 @ 8:00 am
pH (Lab)	8.51	--	--	SM 4500 H+-B	CH	03/27/14 @ 8:00 am
Total Chlorine	0.43	mg/L	0.03	HACH 8167	CH	03/27/14 @ 8:00 am
Specific Gravity	1.080	--	--	Hydrometer	CH	03/27/14 @ 8:00 am
Density	1.068	g/cc	--	Gravimetric	CH	03/27/14 @ 8:00 am
Conductivity	129,450	µmhos/cm	0.1	SM 2510B	JC	03/28/14 @ 1:45 pm
Sodium	27,410	mg/L	0.10	EPA 200.8	BB	04/01/14 @ 12:58 pm
Iron	0.41	mg/L	0.10	EPA 200.8	BB	04/01/14 @ 12:58 pm
Magnesium	1,420	mg/L	0.10	EPA 200.8	BB	04/01/14 @ 12:58 pm
TDS	119,280	mg/L	10	SM 2540C	BB	04/01/14 @ 12:58 pm
Barium	4.14	mg/L	0.005	EPA 200.8	BB	04/01/14 @ 3:09 pm
Alkalinity to pH 4.5 as $CaCO_3$	60	mg/L	1	SM 2320B	AC	04/01/14 @ 11:15 am
Hardness	36,190	mg/L	1.0	SM 2340B	BB	04/01/14 @ 12:58 pm
TOC	1,001	mg/L	1.0	SM 5310B	RD	03/28/14 @ 1:07 pm
Chloride	75,990	mg/L	3.0	EPA 300.0	BB	03/28/14 @ 5:02 pm
Manganese	0.171	mg/L	0.010	EPA 200.8	BB	04/01/14 @ 12:58 pm
TOX	0.79	mg/L	0.05	EPA 9020B	AC	03/31/14 @ 4:45 pm

We certify that the above reported values were obtained by use of procedures appropriate for the sample as submitted.

By: William Sabatose **Date:** 04/02/14

For: William J. Sabatose, Chief Chemical Analyst

ASI # 125020

Chain of Custody Record

1. Customer Information

Company: Waste Treatment Corporation
Contact: Rich Gorton
Address: 341 West Harmar St, PO Box 1550
City: Warren **State:** PA **Zip:** 16365
Phone: 814 726-1500 **Fax** 814 726-1457
Purchase Order Number:

2. Laboratory Information

Company: Analytical Services
Contact: Randy Davido or Bill Sabatose
Address: RD # 2, Box 282 – Formantown Road
City: Brockway **State:** PA **Zip:** 15824
Phone: 814 265-8749 **Fax:** same

3. Sample Type

- Wastewater
- Monitoring
- NPDES
- Solid Waste
- Other

Sample Temp: 4° C
Flow: Continuous
Sample Begin: 3/26/14 8:00 AM
Sample End: 3/27/14 8:00 AM

4. Project Name or Number

WTC EPP: BLP

5. Sampler's Signature / Date

Nathan Tichnell 3/27/14

Num	Date	Time	Sample ID	Type	Grab / Comp	Analysis Requested / Comments
1	3/27/14	8:00 AM			COMP	
2	3/27/14	8:00 AM			COMP	
3	3/27/14	8:00 AM			COMP	
4						
5						
6						
7						
8						

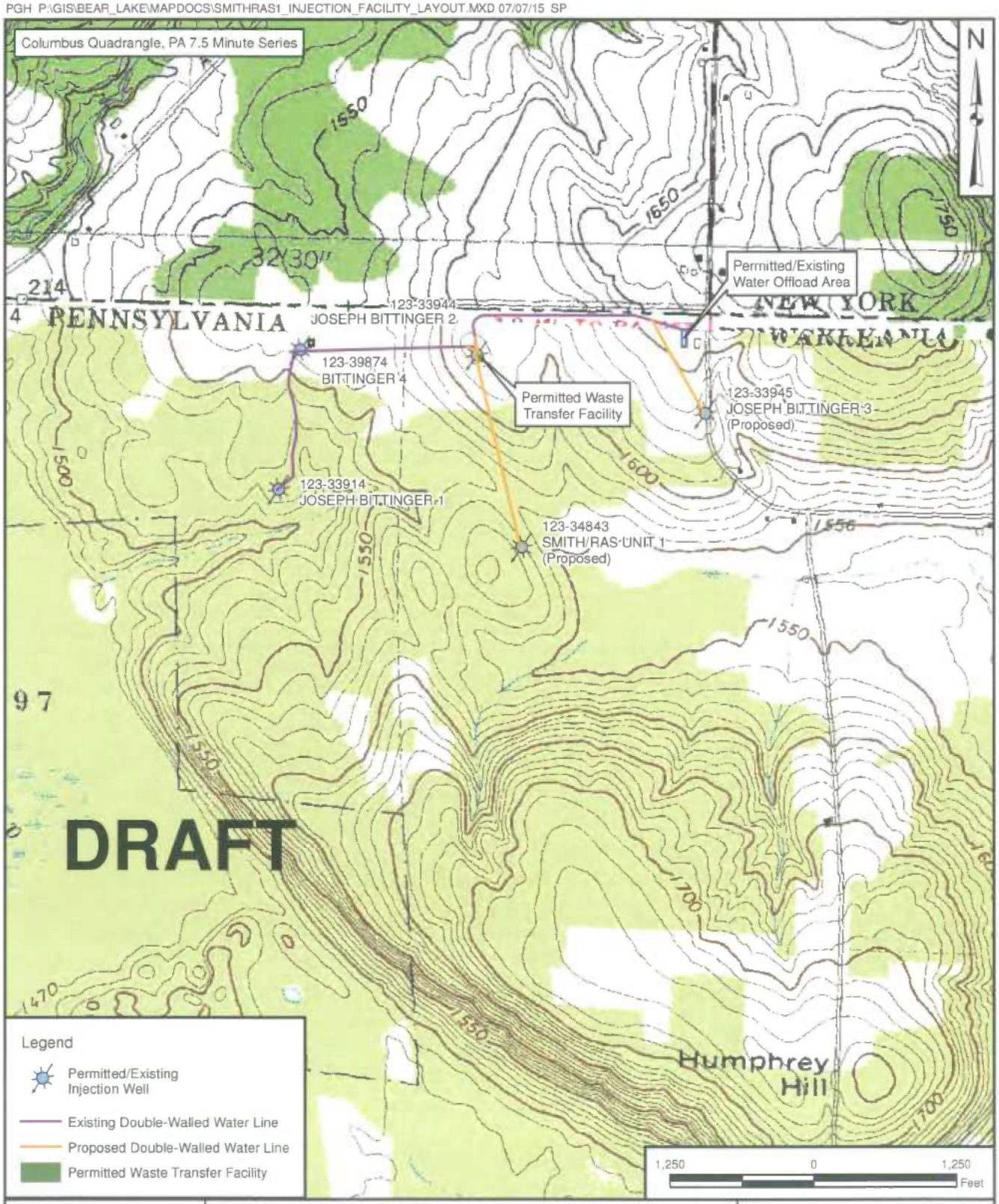
7. Chain of Possession

Num	Date Rec'd	Time	Signature	Organization	Date Pick Up	Time	Mode of Transportation
1	03-27-14	1005A	[signature]	ASI			
2	3-27-14	1430	[signature]	ASI			
3							
4							
5							

Attachment #6

Injection Facility Layout Schematic

PGH P:\GIS\BEAR_LAKE\MAPDOCS\SMITHRAS1_INJECTION_FACILITY_LAYOUT.MXD 07/07/15 SP



TETRA TECH

INJECTION FACILITY LAYOUT
SMITH/RAS UNIT 1 WELL
BEAR LAKE PROPERTIES, LLC
WARREN COUNTY, PENNSYLVANIA

DRAWN BY: S. PAXTON 02/03/15
CHECKED BY: D. SKOFF 07/07/15
APPROVED BY:

CONTRACT NUMBER: 212C-PB-00103

FIGURE NUMBER

REV 0

Attachment #7

Plugging Plan (EPA Form 7520-14) and Exhibit 6 P&A Cost Estimate

OMB No. 2040-0042 Approval Expires 11/30/2014

EPA

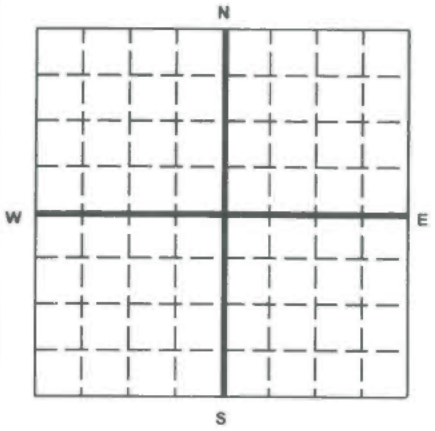
United States Environmental Protection Agency
Washington, DC 20460

PLUGGING AND ABANDONMENT PLAN

Name and Address of Facility
Bear Lake Properties Bittinger #3
1889 Cornish Hill Rd., Bear Lake, PA 16402

Name and Address of Owner/Operator
Bear Lake Properties, LLC
3000 Village Run Road, Unit 103 #223, Wexford, PA 15090

Locate Well and Outline Unit on Section Plat - 640 Acres



State	County	Permit Number
Pennsylvania	Warren	

Surface Location Description
___ 1/4 of ___ 1/4 of ___ 1/4 of ___ 1/4 of Section ___ Township ___ Range ___

Locate well in two directions from nearest lines of quarter section and drilling unit
Surface
Location ___ ft. frm (N/S) ___ Line of quarter section
and ___ ft. from (E/W) ___ Line of quarter section.

TYPE OF AUTHORIZATION
- [x] Individual Permit
- [ ] Area Permit
- [ ] Rule

Number of Wells ___

Lease Name Bittinger

WELL ACTIVITY
- [ ] CLASS I
- [x] CLASS II
  - [x] Brine Disposal
  - [ ] Enhanced Recovery
  - [ ] Hydrocarbon Storage
- [ ] CLASS III

Well Number #3

CASING AND TUBING RECORD AFTER PLUGGING

SIZE	WT (LB/FT)	TO BE PUT IN WELL (FT)	TO BE LEFT IN WELL (FT)	HOLE SIZE
8-5/8"	24	405	405	12-1/4"
4-1/2"	10.5	4508	1165	7-7/8"

METHOD OF EMPLACEMENT OF CEMENT PLUGS
- [x] The Balance Method
- [ ] The Dump Bailer Method
- [ ] The Two-Plug Method
- [ ] Other

CEMENTING TO PLUG AND ABANDON DATA:	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7
Size of Hole or Pipe in which Plug Will Be Placed (inche	4-1/2	7-7/8	7-7/8	8-5/8			
Depth to Bottom of Tubing or Drill Pipe (ft	4450	3343	460	18			
Sacks of Cement To Be Used (each plug)	19	518	35	5			
Slurry Volume To Be Pumped (cu. ft.)	22.4	611.3	41.3	5.9			
Calculated Top of Plug (ft.)	4200	1700	350	0			
Measured Top of Plug (If tagged ft.)							
Slurry Wt. (Lb./Gal.)	15.6	15.6	15.6	15.6			
Type Cement or Other Material (Class III)	Class A	Class A	Class A	Class A			

LIST ALL OPEN HOLE AND/OR PERFORATED INTERVALS AND INTERVALS WHERE CASING WILL BE VARIED (If any)

From	To	From	To

Estimated Cost to Plug Wells
$23,383.00

Certification

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

Name and Official Title *(Please type or print)*	Signature	Date Signed
John C. Holko, Vice President		08/27/2015

EPA Form 7520-14 (Rev. 12-11)

DLH Energy Service, LLC
PO Box 40
5296 Bly Hill Road
Ashville, NY 14710
Phone: 716-410-0204 or 716-410-0028
Fax: 716-526-4080
www.dlhenergyservice.com

07/15/2015

Re: Plugging Estimate for the Bittinger 3 Well Columbus Twp PA

Dear Sirs,

The following is an estimate for the plugging to abandon the above mentioned well.

Rig Time: Two twelve hour days rig at $215/hour, crew truck $100/day, 4th man 8 hours $40/hr for laying down casing,	**$5,680.00**
Wire line service: Jet Cut 4 ½ casing:	**$2,500.00**
Cement and pumping service: Up to 600 sacks cement and up to 140 bbls. Gel.	**$9,948.00**
Water Hauling and Disposal: Delivery of fresh water and removal of returned fluid	**$855.00**
Rentals: 500 bbl. Water tank and open top returns tank 5 day minimum	**$500.00**
Support equipment: Dozer at 2 days	**$500.00**
Trucking: mob and de mob dozer, excavator, water tank, open top, casing and tangibles (20 hrs)	**$1,900.00**
Remedial Work Pea stone plug back with delivery, tank cleaning, excavating and cutting off surface casing, welding cap and monument, reclamation and seeding.	**$1,500.00**
Total	**$23,383.00**

If you have any questions, please feel free to contact me at (716) 410-1543.

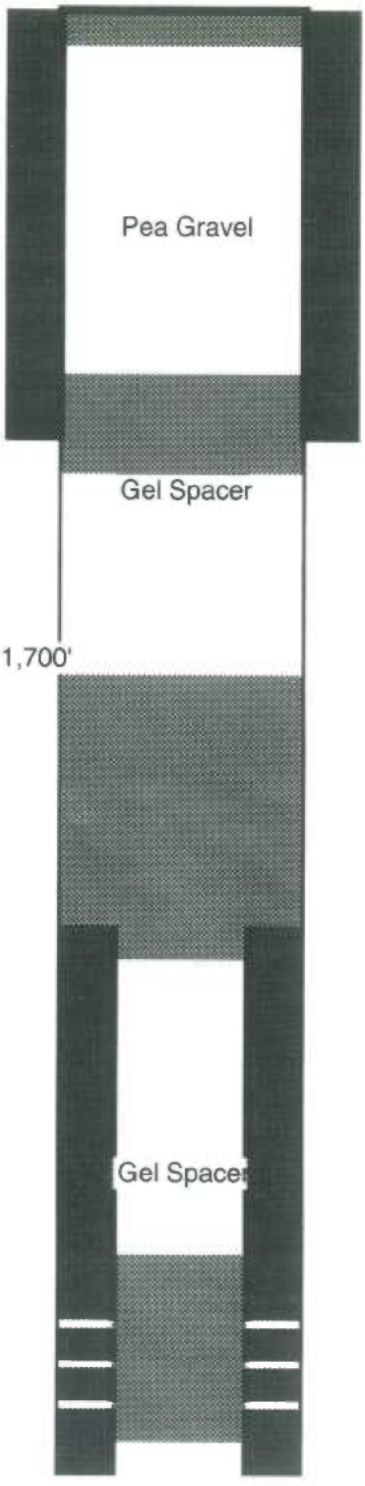
Best Regards,

Bill Weaver

Bill Weaver
Operations Supervisor
DLH Energy Service

FINAL PLUGGED WELL DRAWING

API/Permit: 37-123-33945
Bittinger #3



Pipe cut below plow depth with plate on top

Btm of surface csg 405'

35 sk cement plug 350'-460'

Dunkirk Shale Top approx 1,700'

518 sk cement plug 1700'-3343'

TOC 3,343'

Medina/Whirlpool Perfs
4,260' to 4,439'

19 sk cement plug 4,200'-4,450'

Total casing 4,508 ft

Capacity 4-1/2" casing	0.0895	ft3/ ln- ft	
Capacity 7-7/8" hole	0.3382	ft3/ ln- ft	
Capacity 8-5/8" casing	0.3575	ft3/ ln- ft	
	10.00%	Excess	open hole plugs
Plugging Plan	1.18	ft3/sk	cement yield

Top Plug	Plug Size	Ft	Cement Amnt in Sacks
0 ft			
18 ft	6		5
Bottom of Surface Casing			
350 ft			
460 ft	41		35
One Plug for Hydrocarbon Intervals to Cutoff Point			
1700 ft			
3343 ft	611		518
Plug across producing interval			
4200 ft			
4450 ft	22		19